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EXAMINER	
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ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/196,689	KULKARNI, MANISH	
	Examiner	Art Unit	
	Joseph R. Pokrzywa	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11/13/03*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Amendment

1. Applicant's amendment was received on 11/13/03, and has been entered and made of record. Currently, **claims 1-35** are pending.

Response to Arguments

2. Applicant's arguments with respect to independent **claims 1, 8, 15, 22, and 29** have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. **Claims 1, 3, 5-8, 10, 12-15, 17, 19-22, 24, and 26-35** are rejected under 35 U.S.C. 103(a) as being unpatentable over Wan *et al.* (U.S. Patent Number 5,721,572, cited in the Office action dated 7/10/03) in view of Liang (U.S. Patent Number 5,786,908).

Regarding ***claim 1***, Wan discloses a method for deriving a reverse model look-up table whose entries represent device dependent colors as a function of device independent colors (column 3, lines 39 through 56), based on a forward model look-up table whose entries represent device independent colors obtained in response to printout of corresponding device dependent

color components (column 3, line 63 through column 4, line 28), wherein the forward model and the reverse model look-up tables both comprise a grid of cells in their respective color spaces with entries at each grid point of the grid (see Figs. 1, 2, and 7, and column 3, lines 39 through 62), the method comprising the following steps to determine an entry in the reverse model look-up table for a device independent target color (column 3, lines 39 through 56), performing a binary search of the forward model look-up table to locate a cell that contains the device independent color (column 7, lines 24 through column 24 through column 8, line 37, and column 9, lines 9 through 16), interpolating entries from the forward model look-up table at grid points that define the cell so as to obtain device dependent colors corresponding to the device independent target color (column 5, lines 43 through 67, and column 8, lines 38 through 60), and storing the device dependent color at the grid point of the reverse model look-up table for the device independent target color (column 3, lines 39 through 56).

However, Wan fails to specifically teach of interpolating entries from the forward model look-up table at grid points that define the cell **located by the binary search of the forward model look-up table** so as to obtain device dependent colors corresponding to the device independent target color. Liang discloses a method for deriving a reverse model look-up table whose entries represent device dependent colors as a function of device independent colors (column 13, lines 17 through 20), based on a forward model look-up table (second LUT 98) whose entries represent device independent colors obtained in response to printout of corresponding device dependent color components (column 14, lines 1 through 26), wherein the forward model and the reverse model look-up tables both comprise a grid of cells in their respective color spaces with entries at each grid point of the grid (column 11, lines 25 through

47, and column 14, line 35 through column 15, line 42), the method comprising the following steps to determine an entry in the reverse model look-up table for a device independent target color (column 14, lines 27 through 34), performing a binary search of the forward model look-up table to locate a cell that contains the device independent color (column 14, lines 27 through 65), interpolating entries from the forward model look-up table at grid points that define the cell located by the binary search of the forward model look-up table so as to obtain device dependent colors corresponding to the device independent target color (column 11, lines 25 through 60, and column 14, line 49 through column 15, line 50), and *generating* the device dependent color at the grid point of the reverse model look-up table for the device independent target color (column 4, lines 45 through 58, and column 14, line 35 through column 15, line 64). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include the teachings of Liang in the system of Wan. The system of Wan would easily be modified to include the teachings of Liang, as the systems share cumulative features, being additive in nature.

Regarding ***claim 3***, Wan and Liang disclose the method discussed above in claim 1, and Wan further teaches that binary searching step comprises dividing the device independent color space into multiple regions defined by device independent colors corresponding to small variations from the starting color in device dependent color space (column 6, lines 58 through column 7, line 30), determining which of the multiple regions contains the device independent target color (column 7, lines 32 through 50), and updating the starting color value based on which region contains the device independent target color (column 7, line 51 through column 8, line 41).

Regarding ***claim 5***, Wan and Liang disclose the method discussed above in claim 1, and Wan further teaches that the device independent color space is CIEXYZ or CIELAB color space, and wherein the device dependent color space is CMY or CMYK color space (column 1, lines 32 through 58).

Regarding ***claim 6***, Wan and Liang disclose the method discussed above in claim 1, and Wan further teaches that the forward model look-up table is derived by printing color patches corresponding to predefined colors in device dependent color space, and measuring the colors of the patches in device independent color space (column 1, line 32 through column 2, line 21).

Regarding ***claim 7***, Wan and Liang disclose the method discussed above in claim 1, and Wan further teaches that the predefined colors are in CMY or CMYK space, and the colors are measured in CIEXYZ or CIELAB space (column 1, line 32 through column 2, line 21).

Regarding ***claim 8***, Wan discloses an apparatus for deriving a reverse model look-up table whose entries represent device dependent colors as a function of device independent colors (column 3, lines 39 through 56), based on a forward model look-up table whose entries represent device independent colors obtained in response to printout of corresponding device dependent color components (column 3, line 63 through column 4, line 28), wherein the forward model and the reverse model look-up tables both comprise a grid of cells in their respective color spaces with entries at each grid point of the grid (see Figs. 1, 2, and 7, and column 3, lines 39 through 62), to determine an entry in the reverse model look-up table for a device independent target color (column 3, lines 39 through 56), the apparatus comprises means for performing a binary search of the forward model look-up table to locate a cell that contains the device independent color (column 7, lines 24 through column 24 through column 8, line 37, and column 9, lines 9

through 16), means for interpolating entries from the forward model look-up table at grid points that define the cell so as to obtain device dependent colors corresponding to the device independent target color (column 5, lines 43 through 67, and column 8, lines 38 through 60), and means for storing the device dependent color at the grid point of the reverse model look-up table for the device independent target color (column 3, lines 39 through 56).

However, Wan fails to specifically teach of interpolating entries from the forward model look-up table at grid points that define the cell **located by the binary search of the forward model look-up table** so as to obtain device dependent colors corresponding to the device independent target color. Liang discloses an apparatus for deriving a reverse model look-up table whose entries represent device dependent colors as a function of device independent colors (column 13, lines 17 through 20), based on a forward model look-up table (second LUT 98) whose entries represent device independent colors obtained in response to printout of corresponding device dependent color components (column 14, lines 1 through 26), wherein the forward model and the reverse model look-up tables both comprise a grid of cells in their respective color spaces with entries at each grid point of the grid (column 11, lines 25 through 47, and column 14, line 35 through column 15, line 42), the apparatus comprising the following means to determine an entry in the reverse model look-up table for a device independent target color (column 14, lines 27 through 34), means for performing a binary search of the forward model look-up table to locate a cell that contains the device independent color (column 14, lines 27 through 65), means for interpolating entries from the forward model look-up table at grid points that define the cell located by the binary search of the forward model look-up table so as to obtain device dependent colors corresponding to the device independent target color (column

11, lines 25 through 60, and column 14, line 49 through column 15, line 50), and means for *generating* the device dependent color at the grid point of the reverse model look-up table for the device independent target color (column 4, lines 45 through 58, and column 14, line 35 through column 15, line 64). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include the teachings of Liang in the system of Wan. The system of Wan would easily be modified to include the teachings of Liang, as the systems share cumulative features, being additive in nature.

Regarding ***claim 10***, Wan and Liang disclose the apparatus discussed above in claim 8, and Wan further teaches that the search performing means comprises means for performing iterated steps starting from a starting color value in device dependent color space (column 6, lines 58 through column 8, line 41), the iterated steps comprising dividing the device independent color space into multiple regions defined by device independent colors corresponding to small variations from the starting color in device dependent color space (column 6, lines 58 through column 7, line 30), determining which of the multiple regions contains the device independent target color (column 7, lines 32 through 50), and updating the starting color value based on which region contains the device independent target color (column 7, line 51 through column 8, line 41).

Regarding ***claim 12***, Wan and Liang disclose the apparatus discussed above in claim 8, and Wan further teaches that the device independent color space is CIEXYZ or CIELAB color space, and wherein the device dependent color space is CMY or CMYK color space (column 1, lines 32 through 58).

Regarding ***claim 13***, Wan and Liang disclose the apparatus discussed above in claim 8, and Wan further teaches that the forward model look-up table is derived by printing color patches corresponding to predefined colors in device dependent color space, and measuring the colors of the patches in device independent color space (column 1, line 32 through column 2, line 21).

Regarding ***claim 14***, Wan and Liang disclose the apparatus discussed above in claim 8, and Wan further teaches that the predefined colors are in CMY or CMYK space, and the colors are measured in CIEXYZ or CIELAB space (column 1, line 32 through column 2, line 21).

Regarding ***claim 15***, Wan discloses computer-executable process steps stored on a computer-readable medium (inherent in computer 20, being a Sun Workstation or Apple Macintosh, as read in column 3, line 63 through column 4, line 32), with the process steps to derive a reverse model look-up table whose entries represent device dependent colors as a function of device independent colors (column 3, lines 39 through 56), based on a forward model look-up table whose entries represent device independent colors obtained in response to printout of corresponding device dependent color components (column 3, line 63 through column 4, line 28), wherein the forward model and the reverse model look-up tables both comprise a grid of cells in their respective color spaces with entries at each grid point of the grid (see Figs. 1, 2, and 7, and column 3, lines 39 through 62), the process steps comprising the following codes to determine an entry in the reverse model look-up table for a device independent target color (column 3, lines 39 through 56), code to perform a binary search of the forward model look-up table to locate a cell that contains the device independent color (column 7, lines 24 through column 24 through column 8, line 37, and column 9, lines 9 through 16), code to interpolate

entries from the forward model look-up table at grid points that define the cell so as to obtain device dependent colors corresponding to the device independent target color (column 5, lines 43 through 67, and column 8, lines 38 through 60), and code to store the device dependent color at the grid point of the reverse model look-up table for the device independent target color (column 3, lines 39 through 56).

However, Wan fails to specifically teach of interpolating entries from the forward model look-up table at grid points that define the cell **located by the binary search of the forward model look-up table** so as to obtain device dependent colors corresponding to the device independent target color. Liang discloses computer-executable process steps stored on a computer-readable medium (column 12, lines 57 through 67), the computer executable process steps to derive a reverse model look-up table whose entries represent device dependent colors as a function of device independent colors (column 13, lines 17 through 20), based on a forward model look-up table (second LUT 98) whose entries represent device independent colors obtained in response to printout of corresponding device dependent color components (column 14, lines 1 through 26), wherein the forward model and the reverse model look-up tables both comprise a grid of cells in their respective color spaces with entries at each grid point of the grid (column 11, lines 25 through 47, and column 14, line 35 through column 15, line 42), the computer-executable process steps comprising the following codes to determine an entry in the reverse model look-up table for a device independent target color (column 14, lines 27 through 34), code to perform a binary search of the forward model look-up table to locate a cell that contains the device independent color (column 14, lines 27 through 65), code to interpolate entries from the forward model look-up table at grid points that define the cell located by the

binary search of the forward model look-up table so as to obtain device dependent colors corresponding to the device independent target color (column 11, lines 25 through 60, and column 14, line 49 through column 15, line 50), and code to *generate* the device dependent color at the grid point of the reverse model look-up table for the device independent target color (column 4, lines 45 through 58, and column 14, line 35 through column 15, line 64). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include the teachings of Liang in the system of Wan. The system of Wan would easily be modified to include the teachings of Liang, as the systems share cumulative features, being additive in nature.

Regarding ***claim 17***, Wan and Liang disclose the process steps discussed above in claim 15, and Wan further teaches that the code to perform a binary search comprises code to perform iterated steps starting from a starting color value in device dependent color space (column 6, lines 58 through column 8, line 41), the process steps comprising dividing the device independent color space into multiple regions defined by device independent colors corresponding to small variations from the starting color in device dependent color space (column 6, lines 58 through column 7, line 30), determining which of the multiple regions contains the device independent target color (column 7, lines 32 through 50), and updating the starting color value based on which region contains the device independent target color (column 7, line 51 through column 8, line 41).

Regarding ***claim 19***, Wan and Liang disclose the process steps discussed above in claim 15, and Wan further teaches that the device independent color space is CIEXYZ or CIELAB

color space, and wherein the device dependent color space is CMY or CMYK color space (column 1, lines 32 through 58).

Regarding ***claim 20***, Wan and Liang disclose the process steps discussed above in claim 15, and Wan further teaches that the forward model look-up table is derived by printing color patches corresponding to predefined colors in device dependent color space, and measuring the colors of the patches in device independent color space (column 1, line 32 through column 2, line 21).

Regarding ***claim 21***, Wan and Liang disclose the process steps discussed above in claim 15, and Wan further teaches that the predefined colors are in CMY or CMYK space, and the colors are measured in CIEXYZ or CIELAB space (column 1, line 32 through column 2, line 21).

Regarding ***claim 22***, Wan discloses a computer-readable medium (inherent in computer 20, being a Sun Workstation or Apple Macintosh, as read in column 3, line 63 through column 4, line 32) which stores computer-executable process steps, with the steps to derive a reverse model look-up table whose entries represent device dependent colors as a function of device independent colors (column 3, lines 39 through 56), based on a forward model look-up table whose entries represent device independent colors obtained in response to printout of corresponding device dependent color components (column 3, line 63 through column 4, line 28), wherein the forward model and the reverse model look-up tables both comprise a grid of cells in their respective color spaces with entries at each grid point of the grid (see Figs. 1, 2, and 7, and column 3, lines 39 through 62), the computer-executable process steps comprising the following steps to determine an entry in the reverse model look-up table for a device independent

target color (column 3, lines 39 through 56), a step to perform a binary search of the forward model look-up table to locate a cell that contains the device independent color (column 7, lines 24 through column 24 through column 8, line 37, and column 9, lines 9 through 16), a step to interpolate entries from the forward model look-up table at grid points that define the cell so as to obtain device dependent colors corresponding to the device independent target color (column 5, lines 43 through 67, and column 8, lines 38 through 60), and a step to store the device dependent color at the grid point of the reverse model look-up table for the device independent target color (column 3, lines 39 through 56).

However, Wan fails to specifically teach of interpolating entries from the forward model look-up table at grid points that define the cell **located by the binary search of the forward model look-up table** so as to obtain device dependent colors corresponding to the device independent target color. Liang discloses a computer-readable medium which stores computer-executable process steps (column 12, lines 57 through 67), the computer executable process steps to derive a reverse model look-up table whose entries represent device dependent colors as a function of device independent colors (column 13, lines 17 through 20), based on a forward model look-up table (second LUT 98) whose entries represent device independent colors obtained in response to printout of corresponding device dependent color components (column 14, lines 1 through 26), wherein the forward model and the reverse model look-up tables both comprise a grid of cells in their respective color spaces with entries at each grid point of the grid (column 11, lines 25 through 47, and column 14, line 35 through column 15, line 42), the computer-executable process steps comprising the following steps to determine an entry in the reverse model look-up table for a device independent target color (column 14, lines 27 through

34), a step to perform a binary search of the forward model look-up table to locate a cell that contains the device independent color (column 14, lines 27 through 65), a step to interpolate entries from the forward model look-up table at grid points that define the cell located by the binary search of the forward model look-up table so as to obtain device dependent colors corresponding to the device independent target color (column 11, lines 25 through 60, and column 14, line 49 through column 15, line 50), and a step to *generate* the device dependent color at the grid point of the reverse model look-up table for the device independent target color (column 4, lines 45 through 58, and column 14, line 35 through column 15, line 64). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include the teachings of Liang in the system of Wan. The system of Wan would easily be modified to include the teachings of Liang, as the systems share cumulative features, being additive in nature.

Regarding ***claim 24***, Wan and Liang disclose the medium discussed above in claim 22, and Wan further teaches that the search performing step comprises iterated steps starting from a starting color value in device dependent color space (column 6, lines 58 through column 8, line 41), the process steps comprising dividing the device independent color space into multiple regions defined by device independent colors corresponding to small variations from the starting color in device dependent color space (column 6, lines 58 through column 7, line 30), determining which of the multiple regions contains the device independent target color (column 7, lines 32 through 50), and updating the starting color value based on which region contains the device independent target color (column 7, line 51 through column 8, line 41).

Regarding ***claim 26***, Wan and Liang disclose the medium discussed above in claim 22, and Wan further teaches that the device independent color space is CIEXYZ or CIELAB color space, and wherein the device dependent color space is CMY or CMYK color space (column 1, lines 32 through 58).

Regarding ***claim 27***, Wan and Liang disclose the medium discussed above in claim 22, and Wan further teaches that the forward model look-up table is derived by printing color patches corresponding to predefined colors in device dependent color space, and measuring the colors of the patches in device independent color space (column 1, line 32 through column 2, line 21).

Regarding ***claim 28***, Wan and Liang disclose the medium discussed above in claim 22, and Wan further teaches that the predefined colors are in CMY or CMYK space, and the colors are measured in CIEXYZ or CIELAB space (column 1, line 32 through column 2, line 21).

Regarding ***claim 29***, Wan discloses an apparatus for deriving a reverse model look-up table whose entries represent device dependent colors as a function of device independent colors (column 3, lines 39 through 56), based on a forward model look-up table whose entries represent device independent colors obtained in response to printout of corresponding device dependent color components (column 3, line 63 through column 4, line 28), wherein the forward model and the reverse model look-up tables both comprise a grid of cells in their respective color spaces with entries at each grid point of the grid (see Figs. 1, 2, and 7, and column 3, lines 39 through 62), the apparatus (computer 20, such as a Sun Workstation or Apple Macintosh, as read in column 3, line 63 through column 4, line 32) comprises a memory including region for storing the forward model look-up table, a region for storing the reverse model look-up table (see Fig. 3,

LUT 36 and ILUT 40), and a region for storing executable process steps (being inherent in computer 20), wherein the executable process steps include the following steps to determine an entry in the reverse model look-up table for a device independent target color (column 3, lines 39 through 56), performing a binary search of the forward model look-up table to locate a cell that contains the device independent color (column 7, lines 24 through column 24 through column 8, line 37, and column 9, lines 9 through 16), interpolating entries from the forward model look-up table at grid points that define the cell so as to obtain device dependent colors corresponding to the device independent target color (column 5, lines 43 through 67, and column 8, lines 38 through 60), and storing the device dependent color at the grid point of the reverse model look-up table for the device independent target color (column 3, lines 39 through 56).

However, Wan fails to specifically teach of interpolating entries from the forward model look-up table at grid points that define the cell **located by the binary search of the forward model look-up table** so as to obtain device dependent colors corresponding to the device independent target color. Liang discloses an apparatus for deriving a reverse model look-up table whose entries represent device dependent colors as a function of device independent colors (column 13, lines 17 through 20), based on a forward model look-up table (second LUT 98) whose entries represent device independent colors obtained in response to printout of corresponding device dependent color components (column 14, lines 1 through 26), wherein the forward model and the reverse model look-up tables both comprise a grid of cells in their respective color spaces with entries at each grid point of the grid (column 11, lines 25 through 47, and column 14, line 35 through column 15, line 42), the apparatus comprising a memory including regions for storing executable process steps (column 12, lines 57 through 67), and a

processor for executing the executable process steps, wherein the executable process steps include the following steps to determine an entry in the reverse model look-up table for a device independent target color (column 14, lines 27 through 34), performing a binary search of the forward model look-up table to locate a cell that contains the device independent color (column 14, lines 27 through 65), interpolating entries from the forward model look-up table at grid points that define the cell located by the binary search of the forward model look-up table so as to obtain device dependent colors corresponding to the device independent target color (column 11, lines 25 through 60, and column 14, line 49 through column 15, line 50), and *generating* the device dependent color at the grid point of the reverse model look-up table for the device independent target color (column 4, lines 45 through 58, and column 14, line 35 through column 15, line 64). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include the teachings of Liang in the system of Wan. The system of Wan would easily be modified to include the teachings of Liang, as the systems share cumulative features, being additive in nature.

Regarding ***claim 30***, Wan and Liang disclose the apparatus discussed above in claim 29, and Wan further teaches that the binary search performing step comprises iterated steps starting from a starting color value in device dependent color space (column 6, lines 58 through column 8, line 41), the iterated steps comprising dividing the device independent color space into multiple regions defined by device independent colors corresponding to small variations from the starting color in device dependent color space (column 6, lines 58 through column 7, line 30), determining which of the multiple regions contains the device independent target color (column

7, lines 32 through 50), and updating the starting color value based on which region contains the device independent target color (column 7, line 51 through column 8, line 41).

Regarding ***claims 31, 32, 33, 34, and 35***, Wan and Liang disclose the method, apparatus, process steps, medium and apparatus discussed above in claims 1, 8, 15, 22, and 29, respectively, and Liang further teaches that the interpolating comprises interpolating entries from the forward model look-up table that interpolates device-dependent colors to obtain a device-dependent color corresponding to the device-independent target color (). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include the teachings of Liang in the system of Wan. The system of Wan would easily be modified to include the teachings of Liang, as the systems share cumulative features, being additive in nature.

5. **Claims 2, 9, 16, and 23** are rejected under 35 U.S.C. 103(a) as being unpatentable over Wan *et al.* (U.S. Patent Number 5,721,572, cited in the Office action dated 7/10/03) in view of Liang (U.S. Patent Number 5,786,908), and further in view of Spaulding *et al.* (U.S. Patent Number 5,553,199, cited in the Office action dated 7/10/03).

Regarding ***claims 2, 9, 16, and 23***, Wan and Liang disclose the method, apparatus, process steps, and medium discussed above in claims 1, 8, 15, and 22, respectively, but fail to specifically teach of using tetrahedral interpolation. Spaulding discloses a system for deriving a reverse model look-up table whose entries represent device dependent colors as a function of device independent colors (column 3, lines 50 through 52, and column 7, lines 39 through 50), based on a forward model look-up table whose entries represent device independent colors obtained in response to printout of corresponding device dependent color components, wherein

the forward model and the reverse model look-up tables both comprise a grid of cells in their respective color spaces with entries at each grid point of the grid (see Figs. 1 through 5, and column 4, lines 36 through 49). Spaulding further teaches of interpolating that comprises tetrahedral interpolation (column 5, lines 34 through 50). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include Spaulding's teachings in Wan and Liang's system. Wan and Liang's system would easily be modified with the teachings of Spaulding, as tetrahedral interpolation is widely known and used throughout the art, as recognized by Spaulding, and since the systems share cumulative features, being additive in nature.

6. **Claims 4, 11, 18, and 25** are rejected under 35 U.S.C. 103(a) as being unpatentable over Wan *et al.* (U.S. Patent Number 5,721,572, hereinafter Wan'572, cited in the Office action dated 7/10/03) in view of Liang (U.S. Patent Number 5,786,908), and further in view of Wan *et al.* (U.S. Patent Number 5,625,378, hereinafter Wan'378, cited in the Office action dated 7/10/03).

Regarding ***claim 4, 11, 18, and 25***, Wan'572 and Liang disclose the method, apparatus, process steps, and medium discussed above in claims 3, 10, 17, and 24, respectively, and Wan'572 further teaches that the determining which of the multiple regions contains the device independent target color comprises obtaining dot products for each normal plane vector that defines the multiple regions with the vector that defines the difference between the target color corresponding to the starting color (column 7, line 40 through column 8, line 41), and determines which region contains the device independent target color (column 7, line 51 through column 8, line 8). However, Wan'572 fails to specifically teach of determining which region contains the

device independent target color *in accordance with which of the dot products yields positive values and which yields negative values.*

Wan'378 discloses a system for deriving a reverse model look-up table whose entries represent device dependent colors as a function of device independent colors (column 4, lines 2 through 30), based on a forward model look-up table whose entries represent device independent colors obtained in response to printout of corresponding device dependent color components (column 4, lines 4 through 16), wherein the forward model and the reverse model look-up tables both comprise a grid of cells in their respective color spaces with entries at each grid point of the grid (see Figs. 2 and 3). Wan'378 further teaches of determining which of the multiple regions contains the device independent target color comprises obtaining dot products for each normal plane vector that defines the multiple regions with the vector that defines the difference between the target color corresponding to the starting color (column 1, line 63 through column 2, line 34, column 4, line 50 through column 5, line 42, and column 6, lines 38 through 48), and determining which region contains the device independent target color in accordance with which of the dot products yields positive values and which yields negative values (column 6, lines 37 through 60). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include the teachings of Wan'378 in the system of Wan'572 and Liang. The system of Wan'572 and Liang would easily be modified with the teachings of Wan '378, as the systems share cumulative features, being additive in nature.

Citation of Pertinent Prior Art

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Tanaka ***et al.*** (U.S. Patent Number 6,151,135) discloses a system that includes a color conversion process utilizing reverse input look-up tables.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joe Pokrzywa whose telephone number is (703) 305-0146. The examiner can normally be reached on Monday-Friday, 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward L. Coles can be reached on (703) 305-4712. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-0377.

Joseph R. Pokrzywa
Examiner
Art Unit 2622

jrp

EDWARD COLES
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600